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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/628,420	07/29/2003	Thomas Lee	02105.002290.	6264
47050	7590	03/27/2006	EXAMINER	
RYNDAK & SURI LLP 200 W MADISON STREET SUITE 2100 CHICAGO, IL 60602			CHAWLA, JYOTI	
			ART UNIT	PAPER NUMBER
			1761	

DATE MAILED: 03/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.	Applicant(s)	
	10/628,420	LEE ET AL.	
	Examiner	Art Unit	
	Jyoti Chawla	1761	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) 21-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date: ____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>2/13/04</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-20 are, drawn to Method of improving the stability of a lemon/lime beverage, classified in class 426, subclass 330.3.
 - II. Claims 21-22 drawn to stable lemon/lime beverage, classified in class 426, subclass 590.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions in Group I and Group II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make another and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)).
3. In the instant case a stable lemon/lime flavored beverage claimed in Group II can be made by many other ways by either adding additional ingredients or by not including one or more of the recited ingredients, by altering the amount of at least one of the ingredients from the recited range. It is also possible to make a lemon/ lime flavored beverage by buying a premix and adding soda water to it.
4. The applicant's attorney was contacted over the phone on. During a telephone conversation with applicant's attorney on February 28,2006 a provisional election was made without traverse to prosecute the invention of group I, claims 1-20. Affirmation of

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this election must be made by applicant in replying to this Office action. Claims 21 –22 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant's election without traverse of Group I in response filed on March 2, 2006 is acknowledged.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-5, 9-12, 15-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakel et al. (US 4551342) hereinafter addressed as (Nakel I) as evidenced by Lange's handbook of Chemistry.

8. In regards to claim 1, Nakel I teaches beverages and beverage concentrates with improved flavor, desirable sweetness and sourness that can be controlled over a wide range of pH (column 2, lines 1-49) and the concentrates taught are storage stable and without the off flavors due to the insoluble salt formation on storage. The beverages taught by Nakel can be made as carbonated and noncarbonated, with various flavors and blended flavor components including cola, lemon and lime etc., and blends thereof (column 5, line 47 to column 6, line15) and containing acidulants like citric acid and

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phosphoric acid and also malic/succinic acid having the dissociation constant smaller than both phosphoric and citric acids as recited by the applicant as evidenced by Lange's handbook of Chemistry which is being relied upon to provide the information about the dissociation constants of various edible acids. Nakel I also teaches addition of calcium, potassium and magnesium and other cations like sodium and ammonium in smaller amounts as acid salts i.e., as citrates, malates and phosphates to the beverage and beverage concentrates taught (column 6, lines 50-62 and column 4, line 63 to column 5, line 10).

9. Claim 2 recites that the organic acid is selected from the group consisting of adipic acid, succinic acid, glutaric acid and combinations thereof. In regards to claim 2, Nakel I teaches the use of malic acid (hydroxysuccinic acid), succinic, tartaric, fumaric and the like can be included in the acidulant system of the beverage (Column 7, lines 1-14). Nakel I also teaches that malic acid can be wholly or partially substituted with succinic acid in their taught beverage (Column 7, lines 1-14). Succinic acid is included in applicant's recited list.

10. Claim 3 recites that citric acid alone is used in combination with the organic acid and claim 6 recites a combination of phosphoric acid and citric acid is used in combination with the organic acid. In regards to Claims 3 and 6, Nakel I teaches that the acid component of their beverages is based on mixtures of citric, malic (succinic) and phosphoric acids, i.e., citric/ malic (succinic) mixtures (as is the case in most citrus

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flavored beverages) citric/malic (succinic)/ phosphoric mixtures (as in cola flavored beverages) among others (column 2, lines 14-20; column 7, lines 1-14; Column 10-13, Embodiments 1-9 and summary table).

11. Claims 4 and 5 recite the ratio range of organic acid and citric acid in a beverage. Nakel I teaches beverages and beverage concentrates with the recited organic acid and citric acid, and gives formula to determine the total acidity of the drink. Nakel I also teaches that by varying the amounts of one or more of the acids, it can be determined what the acid number of the beverage will be and from that it is possible to determine if the beverage will be acceptable (column 8, line 48 to column 9, line 17). The formula is:

$$(8.7.\text{times.cit})+(8.9.\text{times.mal})+(11.4.\text{times.phos})+(5.5.\text{times.cit.times.mal}) - (0.6.\text{times.cit.times.phos})+(5.0.\text{times.mal.times.phos})+(30.1.\text{times.cit.times.mal.times.phos})=A$$

wherein cit is the weight ratio of citric acid in the acid component, mal is the weight ratio of malic, succinic or a mixture of malic and succinic acid, phos is the weight ratio of phosphoric acid, and A is from about 9.6 to about 12.1.

12. The formula teaches that if the resulting acid number (A) falls within 9.6 and 12.1, the beverage would have a desirable acid level. It would be art recognized to input the desired citric acid and malic/succinic acid percent to determine the total acidity of the beverage. If the ratio of organic acid:citric acid is taken as 1:3 or 1:4 as recited by the applicant in claims 4 and 5 respectively and plug in the numbers in the formula where amount of phosphoric acid is zero and organic acid : citric acid is 0.25:0.75 (i.e., 1:3 ratio) and 0.2:0.8 (i.e., 1:4 ratio) respectively. After plugging in the numbers

<u>Ratio</u>	<u>Substitution in Formula</u>	<u>Solution</u>
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$$1: 3 \rightarrow (8.7 \times 0.75) + (8.9 \times 0.25) + (5.5 \times 0.75 \times 0.25) = 9.78$$

$$1: 4 \rightarrow (8.7 \times 0.80) + (8.9 \times 0.2) + (5.5 \times 0.80 \times 0.2) = 9.62$$

Both the above ratios have been recited by the applicant as acceptable acid ratios and their results fall within the accepted acidity range (A) of 9.6 to 12.1 as taught by Nakel I, therefore, Nakel I anticipates the claims 4 and 5 as recited by the applicant.

13. Claim 9 recites the amount of citric acid in lemon/lime flavored beverage be 0.18-0.24 % and claim 10 as recited narrows the range to 0.19-0.23% based on the finished weight of the beverage. In regards to claims 9 and 10, Nakel I teaches a beverage with citrus (lemon /lime flavor or cola flavor among others), where the edible acid component comprises from 0.3-1.2% by weight of the finished beverage (column 3, lines 1-10). Nakel I also teaches a citric acid ranges preferably from 20% to 79% of total acid component of the beverage (Column 13, lines 5-15). Therefore, the amount of citric acid in the beverage taught by Nakel I can vary between 0.06- 0.96% which encompasses applicant's suggested ranges according to claims 9 and 10.

14. Claims 11 and 12 recite that the citrate and phosphate salts are independently selected from sodium, potassium and calcium salts that can be mono-, di- or tri- ionic. In regards to claims 11 and 12, Nakel I teaches beverages containing a mixture of cations like Calcium, Phosphorus, Magnesium, sodium and ammonium as citrates, malates, phosphates and dihydrogen phosphates among other forms to provide the right pH and

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appropriate flavor note in conjunction with the acid (Column 6, lines 50-62), which anticipates the applicant's recitation of claims 11 and 12.

15. Claims 15 and 16 and 17 and 18 recite the combined amount of citrate and phosphate salts present in the beverage where two or more acidulants are being used. Nakel I teaches the citrate and phosphate salts as the cation component. Nakel I teaches that the cation component for a liquid carbonated beverage ranges between 0.1-0.6% by weight which falls in the range recited by the applicant in claims 15 –18. Nakel I also provides general formulas that can be used to determine the right amount of total cations in the beverage in proportion to the acidulants (edible acids) and vice versa to give a general idea of an acceptable range for acid and cation for any beverage flavor taught.

16. Claims 19 and 20 recite that the beverages with lemon/lime flavor are lemon/lime carbonated beverage and lemon/lime flavored carbonated cola beverage respectively. In regards to claims 19 and 20 Nakel I teaches beverage and beverage concentrates in particular carbonated soft drinks (column 1, lines 13-14) and the flavor component includes blends flavors like lemon and lime and cola beverages (kola nut flavor and citrus blend) (column 5, line 47 to column 6, line 15).

17. Therefore, as discussed above Nakel I anticipates applicant's recitation of claims 1-5, 9-12, 15-20.

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18. Claims 1-3, 6, 9-10, 15-16 and 19-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakel et al. (US 4737375) herein after addressed as "Nakel II" as evidenced by Lange's Handbook of Chemistry.

19. Claim 1 recites an acidulant system and a buffer salt system. In regards to claim 1, Nakel II teaches beverages and beverage concentrates, both carbonated and noncarbonated, having citrus flavor component that includes cola, lemon and lime etc., and blends thereof (column 8, lines 30-55) and containing acidulants like citric acid and phosphoric acid and also malic acid (hydroxysuccinic acid) which has the dissociation constant smaller than both phosphoric and citric acids as evidenced by Lange's handbook of Chemistry which is being relied upon to provide the information about the dissociation constants of various edible acids. Nakel II also teaches addition of calcium citrate, calcium malate, calcium phosphate to the beverage or concentrate. Therefore, Nakel II anticipates applicant's recitation of claim 1.

20. Claim 2 recites that the organic acid is selected from the group consisting of adipic acid, succinic acid, glutaric acid and combinations thereof. In regards to claim 2, Nakel II teaches the use of malic acid (hydroxylsuccinic acid) (Column 3, lines 5-10), which is included in applicant's recited list.

21. In regards to Claims 3 and 6, Nakel II teaches that the acid component of their beverages is based on mixtures of citric, malic (succinic) and phosphoric acids, i.e.,

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citric/ malic (succinic) mixtures , citric/mailc (succinic)/ phosphoric mixtures among others (column 4, lines 56-65 and Column 11, Embodiments 4 and 2).

22. In regards to claims 9 and 10, Nakel II teaches a beverage in the Embodiment 2, which has 28.28 g of citric acid in 5200 g of total concentrate, which is 0.543%. The concentrate is diluted to make the final beverage to give the final citric acid to 0.22% (Column 11, lines 45-65), which falls within the recited range of the applicant.

23. Claims 15 and 16 recite the combined amount of citrate and phosphate salts present in the beverage where two or more acidulants are being used. Nakel II teaches the citrate and phosphate salts as a part they call as calcium component. Nakel II also teaches the range of cation component for a liquid carbonated beverage their taught range is 0.06-0.15% by weight (column 4, lines 36-46) which falls in the range recited by the applicant in claims 15 –16.

24. Claims 19 and 20 recite that the beverages with lemon/lime flavor are lemon/lime carbonated beverage and lemon/lime flavored carbonated cola beverage respectively. In regards to claims 19 and 20 Nakel II teaches beverage and beverage concentrates in particular carbonated soft drinks (column 1, lines 13-14) and the flavor component includes blends flavors like lemon and lime and cola beverages (kola nut flavor and citrus blend) (column 8, line 49-56).

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25. Therefore, based on the discussion above Nakel II anticipates applicant's recitation of claims 1-3, 6, 9-10, 15-16 and 19-20.

Claim Rejections - 35 USC § 103

26. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

27. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

Determining the scope and contents of the prior art.
Ascertaining the differences between the prior art and the claims at issue.
Resolving the level of ordinary skill in the pertinent art.
Considering objective evidence present in the application indicating obviousness or nonobviousness.

28. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakel et al (US 4551342) herein after addressed as "Nakel I" as applied to claims 1-6, 9-12, 15-22 and 6 above and as evidenced by Lange's Handbook of Chemistry and further in view of Dictionary of Food Ingredients 2001.

29. Claims 7 and 8 recite the ratio range of organic to phosphoric to citric acid in a beverage is 3.0 - 4.0: 1.4 - 2.0: 1.0 in claim 7 and 3.3 - 3.7: 1.6 - 1.8: 1.0 in claim 8

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respectively. Nakel I teaches beverages and beverage concentrates with the recited organic acid, phosphoric acid and citric acid and as discussed above Nakel I also teaches a formula to determine the total acidity of the drink (column 8, line 48 to column 9, line 17). Nakel I teaches a ratio of 3.6: 1.4:1.3 in embodiment 2 (column 1, lines 15-30) which falls within the recited range of the applicant for the amount of organic acid and phosphate, however has a little more citric acid in proportion. Nakel I also teaches that by adjusting the concentration of acids in relation to the cations or buffer salts, it is possible to alter the pH and sourness in the flavor of the resulting beverage (column 9, lines 10-17). Therefore, it would have been obvious to the one with ordinary skill in the art at the time of the invention to slightly adjust the amount of citric acid in the beverage of Embodiment 2 as taught by Nakel I to accommodate the range recited by the applicant because

- Embodiment 2 taught by Nakel I is an example of the various acid combinations possible in preparing a beverage with low pH and Nakel I also teaches that the amount of acid components can be adjusted to be used in combination with various cation salts or buffer salts in order to alter the flavor to desired level, i.e., sourness, tartness, delayed or lingering sourness etc.

30. While the prior art does not expressly teach the exact ratios, it was well known to use the acids listed in shelf stable beverages in different amounts in order obtain the desired flavor. Therefore, absent is showing to the contrary by clear and convincing evidence, it is not seen how the specific ratios claimed by the applicant would create an unexpected result.

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31. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakel et al (US 4551342) herein after addressed as "Nakel I" as applied to claims 1-6, 9-12, 15-22 and 6 above and as evidenced by Lange's Handbook of Chemistry and further in view of Kuypers (US 4746527), and further in view of Lee et al (US 5348756), hereinafter addressed as "Lee".

32. Claims 13 and 14 recite the ratio of citrate and phosphate salt. In regards to claims 13 and 14 Nakel I teaches the use of mixtures of certain cations (calcium, magnesium and potassium) which, act as buffers, can be present in the beverage composition either as carbonates, hydroxides, bicarbonates or sour salts (citrate etc.). However, Nakel I is silent as to the exact proportion of these salts in the beverage composition taught.

33. Kuypers teaches a drink composition with stabilizing salts to reduce the protein flocculation on top of coffee during dissolution. The stabilizing salts preferably are sodium hydrogen phosphate (0.6-1.0% by weight) and a citrate (0.3-0.5% by weight) (column 1, line 67 to column 2, line10). Thus the proportion of citrate to phosphate as taught by Kuypers ranges from 0.3-0.5: 0.6-1.0, which falls within the range recited by the applicant.

34. Lee makes gelatin gels in flavors and adds buffering salts to neutralize the acidity of citric and adipic acids with soluble phosphate and citrate salts at a ratio of 0.9-2: 1 and preferably of 1-1.5: 1(column 2, lines 34-49). The range of the buffer salt ratio taught by Lee includes the ratios recited by the applicant in Claims 13 and 14.

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35. Therefore, it would have been obvious to the one with ordinary skill in the art at the time of invention to modify Nakel I to include a specific ratio range of the cation / buffer salts used in the beverage because

- Kuypers teaches stabilizing salts in the proportion of citrate to phosphate ranges from 0.3-0.5: 0.6-1.0, which helps in the flocculation protein on top of coffee beverage while it is being dissolved.
- Lee teaches the buffer salts in the ratio of 0.9-2: 1 and preferably of 1-1.5: 1, as it balances the acid component the desired level and helps provide a higher gel strength with the same amount of gelatin in the dessert.

36. While the prior art does not expressly teach the exact ratios, it was well known to use the acids listed in shelf stable beverages in different amounts in order obtain the desired flavor. Therefore, absent is showing to the contrary by clear and convincing evidence, it is not seen how the specific ratios claimed by the applicant would create an unexpected result.

Remarks/ Conclusion

37. The prior art made of record as part of USPTO form 892 contains references that have not been relied upon in this office action but are considered pertinent to applicant's disclosure.

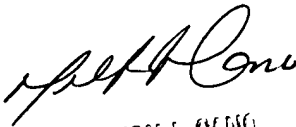
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jyoti Chawla whose telephone number is (571) 272-8212. The examiner can normally be reached on 8:00 am to 4:30 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Milton Cano can be reached on (571) 272-1398. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jyoti Chawla
Examiner
Art Unit 1761
3/3/06


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